

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please CANCEL claims 7, 13 and 26 without prejudice or disclaimer and AMEND claims 1, 8, 10, 12, 14-18, 20, 22-25, 28, 30 and 31 in accordance with the following:

1. **(currently amended)** An optical reading and/or writing system used with an optical disk, comprising:

- an optical pickup including an objective lens, focusing a light beam to form a light spot on a recording surface of the optical disk;
- a voice coil motor;
- an actuator arm ~~is~~-pivotal in a radial direction of the optical disk by the voice coil motor;
- a load beam supported by the actuator arm, and movable up and down and in the radial direction of the optical disk;
- a slider on which the objective lens is mounted;
- a flexure attached to the load beam, supporting the slider to move over the recording surface; and
- a driving unit mounted on free ends of the actuator arm and the load beam, providing a driving force in the radial direction to the free end of the load beam.

2. **(original)** The optical reading and/or writing system of claim 1, wherein the load beam comprises:

- a fixed end fixed to the actuator arm;
- the free end extending from and flexible with respect to the fixed end; and
- a hinged portion between the fixed end and the free end, facilitating movement of the free end in the radial direction.

3. **(original)** The optical reading and/or writing system of claim 2, wherein the hinged portion comprises a pair of slim portions spaced a predetermined distance apart from each other, the slim portions connecting facing edges of the fixed end and the free end.

4. **(original)** The optical reading and/or writing system of claim 2, wherein the hinged portion is formed around a hole to connect facing edges of the fixed end and the free end.

5. **(original)** The optical reading and/or writing system of claim 2, wherein the fixed end and the free end are connected through the hinged portion.

6. **(original)** The optical reading and/or writing system of claim 1, wherein the driving unit comprises a magnet and a pair of coils, the magnet and the pair of coils being mounted on free ends of the actuator arm and the load beam, respectively, facing each other.

7. **(cancelled)**

8. **(currently amended)** An optical reading and/or writing system used with an optical disk, comprising: The optical reading and/or writing system of claim 7,

a slider;

an actuator assembly pivotable in a radial direction of the optical disk, supporting the slider to enable the slider to move over a recording surface of the optical disk; and

an optical pickup focusing a light beam to form a light spot on the recording surface of the optical disk, the optical pickup comprising:

a light source emitting the light beam,

an optical path changing unit arranged on an optical path between the light source and the recording surface, changing the traveling path of the incident beam,

an objective lens mounted onto the slider, focusing the light beam from the optical path changing unit onto the recording surface,

a photodetector receiving the light beam reflected from the recording surface and passed through the objective lens and the optical path changing unit, and

at least one optical fiber connecting at least the light source and the optical path changing unit, transferring the emitted light beam to the optical path changing unit;

wherein:

an optical loss between the light source and the optical path changing unit is suppressed;

the actuator assembly comprises:

an actuator arm pivotable in the radial direction of the optical disk by a voice coil motor; motor,

an elastically deformable load beam having one end fixed to the actuator arm; ~~arm,~~ arm, and

a flexure attached to one side of the load beam;

~~wherein~~ the optical path changing unit is disposed between the load beam and the actuator arm, facing the objective lens through first light passing apertures, respectively formed in the load beam and the flexure; and

~~wherein~~ the photodetector is fitted into a second light passing aperture formed in the actuator arm to face the optical path changing unit and through the first light passing apertures.

9. (original) The optical reading and/or writing system of claim 8, wherein the optical path changing unit is mounted on the load beam to face the actuator arm and to be enclosed by the second light passing aperture.

10. (currently amended) ~~The optical reading and/or writing system of claim 7,~~ An optical reading and/or writing system used with an optical disk, comprising:

a slider;

an actuator assembly pivotable in a radial direction of the optical disk, supporting the slider to enable the slider to move over a recording surface of the optical disk; and

an optical pickup focusing a light beam to form a light spot on the recording surface of the optical disk, the optical pickup comprising:

a light source emitting the light beam,

an optical path changing unit arranged on an optical path between the light source and the recording surface, changing the traveling path of the incident beam,

an objective lens mounted onto the slider, focusing the light beam from the optical path changing unit onto the recording surface,

a photodetector receiving the light beam reflected from the recording surface and passed through the objective lens and the optical path changing unit, and

at least one optical fiber connecting at least the light source and the optical path changing unit, transferring the emitted light beam to the optical path changing unit and suppressing an optical loss between the light source and the optical path changing unit is suppressed,

wherein the objective lens, the optical path changing unit and the photodetector are vertically aligned.

11. **(original)** The optical reading and/or writing system of claim 8, further comprising;
a base, wherein the actuator assembly further comprises a mounter supported against the base and has a recess receiving the light source, and the actuator arm has a hole for passing the optical fiber from one side to the other side thereof.

12. **(currently amended)** An optical system used with an optical disk, comprising:
an actuator arm pivotable about an axis in a radial direction of the optical disk and having a free end distant from the pivot axis;

a load beam supported by the actuator arm and having a first-free end movable in the radial direction relative to the movement of the actuator arm; and

a slide element having an objective lens and attached to the load beam, the slide element movable over a recording surface of the optical disk, the objective lens having a central axis; and

a driving unit having first and second parts, the first part mounted at the free end of the actuator arm and the second part mounted at the free end of the load beam and interacting with the first part to provide a driving force to move the slide element in the radial direction relative to the actuator arm, wherein:

the driving unit is more distant from the pivot axis than the central axis of the objective lens.

13. **(cancelled)**

14. **(currently amended)** The optical system of ~~claim 13~~ claim 12, wherein the driving unit comprises:

a magnet mounted on the first-free end of the actuator arm; and

coils mounted on the first-free end of the load beam, interacting with the magnet to generate the drive force.

15. **(currently amended)** The optical system of claim 12, wherein the load beam comprises:

a ~~second-fixed~~ end fixed-connected to a second end of the actuator arm; and

an intermediate region, between the first-free end and second ends ~~the fixed end~~ of the load beam, and flexible so as to enable the movement of the first-free end of the load beam in the radial direction relative to the actuator arm.

16. **(currently amended)** The optical system of claim 15, wherein the intermediate region comprises a pair of extensions separated by a gap from each other, connecting facing edges of the first-fixed end and second-the free ends-end of the load armbeam.

17. **(currently amended)** The optical system of ~~claim 13~~claim 12, wherein the load beam further comprises:

a second-fixed end fixed-connected to a ~~second-end-of-the~~ actuator arm; and
an intermediate region, disposed between the first-free and second-fixed ends of the load beam and closer to the second-fixed end of the load beam than to the free end of the load beam, the intermediate region flexible ~~so as to~~ enable the movement of the first-free end of the load beam in the radial direction relative to the actuator arm, ~~and spaced apart from the driving unit by a predetermined distance.~~

18. **(currently amended)** The optical system of claim 17, wherein the flexible intermediate region comprises a pair of extensions separated by a gap from each other, connecting facing edges of the first-fixed and second-free ends of the load armbeam.

19. **(original)** The optical system of claim 12, further comprising:
an optical pickup focusing a light beam onto the recording surface of the optical disk, comprising

a light source mounted on the actuator arm, generating the light beam,
a photodetector,
an optical path changing unit directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector, and
an optical fiber connecting the light source and the optical path changing unit, transferring the light beam from the light source to the optical path changing unit.

20. **(currently amended)** ~~The optical system of claim 19,~~ An optical system used with an optical disk, comprising:

an actuator arm having first and second ends and pivotable in a radial direction of the optical disk about the second end of the actuator arm;
a load beam supported by the actuator arm and having a first end movable in the radial

direction relative to the movement of the actuator arm;

a slide element having an objective lens and attached to the load beam, the slide element movable over a recording surface of the optical disk; and

an optical pickup focusing a light beam onto the recording surface of the optical disk, the optical pickup comprising

a light source mounted on the actuator arm, generating the light beam,

a photodetector,

an optical path changing unit directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector, and

an optical fiber connecting the light source and the optical path changing unit, transferring the light beam from the light source to the optical path changing unit;

wherein:

the light source is mounted at ~~a~~the second end of the actuator arm at a first side of the actuator arm facing away from the optical disk;

the optical path changing unit is disposed between the first ends of the load beam and the actuator arm at a second side of the actuator arm opposite the first side; ~~and~~

the photodetector is in a second light passing aperture at the first side of the actuator arm; and

the actuator arm has a ~~held~~hole passing the optical fiber from the first side at the light source to the second side at the optical path changing unit of actuator arm.

21. (original) The optical system of claim 20, wherein the objective lens, the optical path changing unit and the photodetector are aligned in a direction perpendicular to the recording surface of the optical disk.

22. (currently amended) ~~The optical system of claim 19,~~ An optical system used with an optical disk, comprising:

an actuator arm pivotable in a radial direction of the optical disk;

a load beam supported by the actuator arm and having a first end movable in the radial direction relative to the movement of the actuator arm;

a slide element having an objective lens and attached to the load beam, the slide element movable over a recording surface of the optical disk; and

an optical pickup focusing a light beam onto the recording surface of the optical disk, the

optical pickup comprising

a light source mounted on the actuator arm, generating the light beam,

a photodetector,

an optical path changing unit directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector, and

an optical fiber connecting the light source and the optical path changing unit, transferring the light beam from the light source to the optical path changing unit;

wherein the objective lens, the optical path changing unit and the photodetector are aligned in a direction perpendicular to the recording surface of the optical disk.

23. **(currently amended)** ~~The optical system of claim 19,~~ An optical system used with an optical disk, comprising:

an actuator arm pivotable in a radial direction of the optical disk;

a load beam supported by the actuator arm and having a first end movable in the radial direction relative to the movement of the actuator arm;

a slide element having an objective lens and attached to the load beam, the slide element movable over a recording surface of the optical disk; and

an optical pickup focusing a light beam onto the recording surface of the optical disk, the optical pickup comprising

a light source mounted on the actuator arm, generating the light beam,

a photodetector,

an optical path changing unit directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector, and

an optical fiber connecting the light source and the optical path changing unit, transferring the light beam from the light source to the optical path changing unit;

wherein the objective lens, the optical path changing unit and the photodetector are adjacent to each other at a first end of the sliding element, and the first ends ~~end~~ of the load beam and an end of the actuator arm.

24. (currently amended) ~~The optical system of claim 12, further comprising:~~ An optical system used with an optical disk, comprising:

an actuator arm pivotable in a radial direction of the optical disk;

a load beam supported by the actuator arm and having a first end movable in the radial direction relative to the movement of the actuator arm;

a slide element having an objective lens and attached to the load beam, the slide element movable over a recording surface of the optical disk; and

an optical pickup focusing a light beam onto the recording surface of the optical disk, the optical pickup comprising:

a light source mounted on the actuator arm, generating the light beam,

a photodetector, and

an optical path changing unit directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector;

wherein the objective lens, the optical path changing unit and the photodetector are aligned in a direction perpendicular to the recording surface of the optical disk.

25. (currently amended) ~~The optical system of claim 12, further comprising:~~ An optical system used with an optical disk, comprising:

an actuator arm pivotable in a radial direction of the optical disk;

a load beam supported by the actuator arm and having a first end movable in the radial direction relative to the movement of the actuator arm;

a slide element having an objective lens and attached to the load beam, the slide element movable over a recording surface of the optical disk; and

an optical pickup focusing a light beam onto the recording surface of the optical disk, the optical pickup comprising

a light source mounted on the actuator arm, generating the light beam,

a photodetector, and

an optical path changing unit directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector;

wherein the objective lens, the optical path changing unit and the photodetector are adjacent to each other at a first end of the sliding element, and the first ends ~~end~~ of the load beam and a first end of the actuator arm.

26. (cancelled)

27. (original) An optical system used with an optical disk, comprising:
an actuator arm assembly pivotable in a radial direction of the optical disk, and
supporting a slider movable over a recording surface of the optical disk;
an optical pickup focusing a light beam onto the recording surface of the optical disk,
comprising
a light source mounted on the actuator arm assembly, generating the light beam,
a photodetector mounted on the actuator arm assembly,
an optical path changing unit mounted on the actuator arm assembly, directing
the light beam from the light source toward the recording surface of the optical disk, and the light
beam reflected from the recording surface of the optical disk toward the photodetector, and
an objective lens mounted on the slider, focusing the light beam from the optical
path changing unit to the recording surface of the optical disk;
wherein the objective lens, the optical path changing unit and the photodetector are
aligned in a direction perpendicular to the recording surface of the optical disk.

28. (currently amended) The optical system of claim 27, wherein the actuator arm
assembly comprises:
an actuator arm pivotable in the radial direction of the optical disk;
an elastically deformable load beam having one end fixed to the actuator arm and a
flexure attached to one side of the load beam;
wherein the optical path changing unit is disposed between the load beam and the
actuator arm, facing the objective lens through first light passing apertures respectively formed in
a second end of the load beam and in the flexure; and
wherein the photodetector faces the optical path changing unit and the objective lens
through a second light passing aperture formed in an end of the actuator arm and aligned with
the first light passing apertures.

29. (original) The optical system of claim 28, wherein the photodetector is fitted in the
second light passing aperture and the optical path changing unit is mounted on the load beam to
face the actuator arm and is enclosed by the second light passing aperture.

30. **(currently amended)** An optical system used with an optical disk, comprising:
an actuator arm assembly pivotable in a radial direction of the optical disk, and
supporting a slider movable over a recording surface of the optical disk, the actuator arm assembly having a pivot end and a free end;
an optical pickup focusing a light beam onto the recording surface of the optical disk,
comprising:
a light source mounted on the actuator arm assembly, generating the light beam,
a photodetector mounted on the actuator arm assembly,
an optical path changing unit mounted on the actuator arm assembly, directing
the light beam from the light source toward the recording surface of the optical disk, and the light
beam reflected from the recording surface of the optical disk toward the photodetector, and
an objective lens mounted on the slider, focusing the light beam from the optical
path changing unit to the recording surface of the optical disk;
wherein the objective lens, the optical path changing unit and the photodetector are
adjacent to each other at a ~~first~~the free end of ~~the sliding element, and the first ends of the load~~
~~beam and the actuator arm~~ assembly.

31. **(currently amended)** The optical system of claim 30, wherein the actuator arm
assembly comprises:
an actuator arm pivotable in the radial direction of the optical disk; and
an elastically deformable load beam having one end fixed to the actuator arm and a
flexure attached to one side of the load beam;
wherein the optical path changing unit is disposed between the load beam and the
actuator arm, facing the objective lens through first light passing apertures respectively formed in
a second end of the load beam and in the flexure; and
wherein the photodetector faces the optical path changing unit and the objective lens
through a second light passing aperture formed in an end of the actuator arm and aligned with
the first light passing apertures.

32. **(original)** The optical system of claim 31, wherein the photodetector is fitted in the
second light passing aperture and the optical path changing unit is mounted on the load beam to
face the actuator arm and is enclosed by the second light passing aperture.